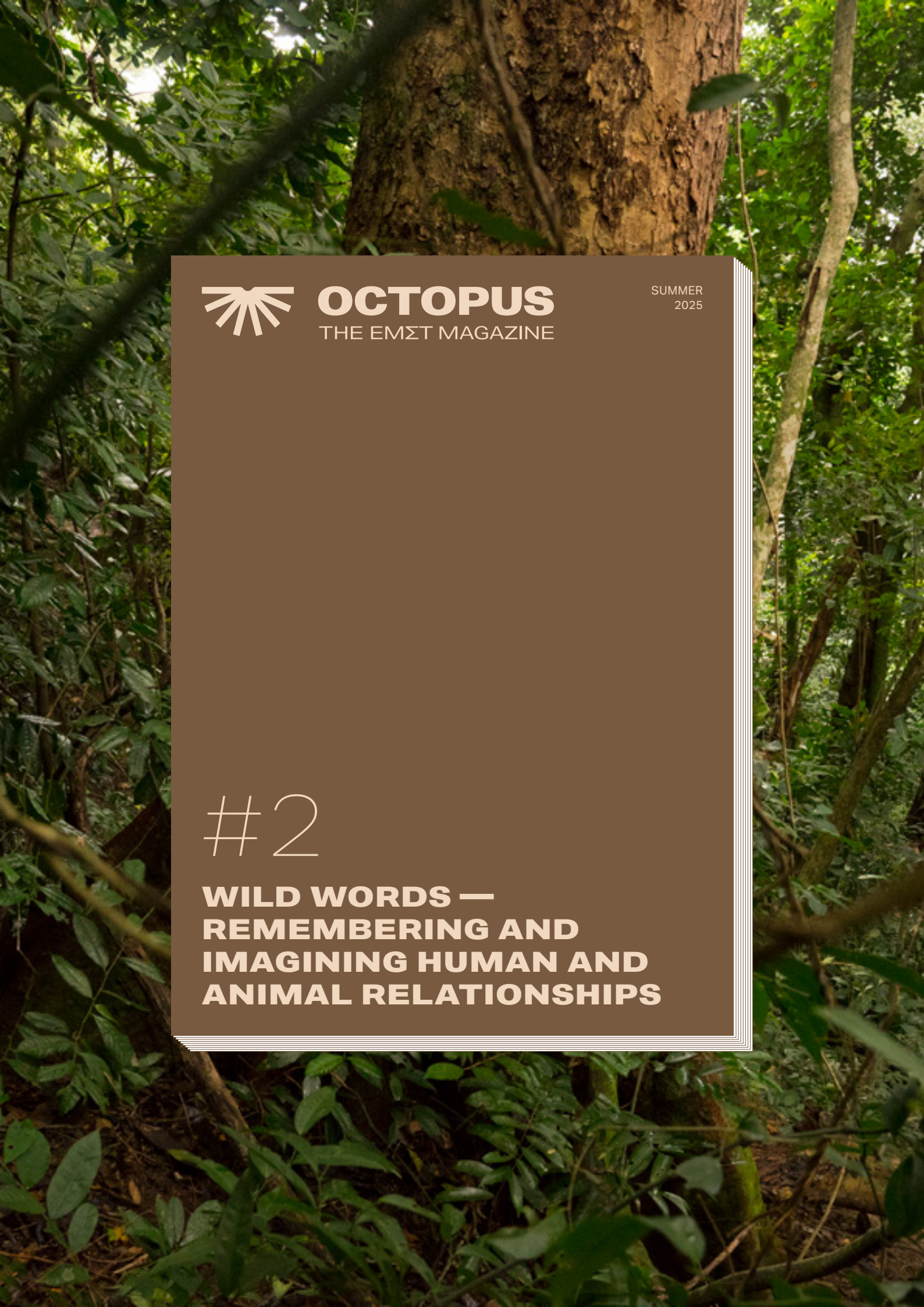

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#2

WILD WORDS — REMEMBERING AND IMAGINING HUMAN AND ANIMAL RELATIONSHIPS

KYVELI MAVROKORDOPOULOU
PURE FICTION

Michela de Mattei, *True Believers See More Patterns*, 2024
Ongoing video archive of thylacine sightings
Video still, 18′ 42″ (in progress)
Courtesy of the artist

In 1998, a team of scientists introduced a herd of Przewalski horses into the Ukrainian Chernobyl exclusion zone as part of a scientific experiment. Would the equine population survive? How would this affect its genetic evolution? The experiment consisted of testing how the animal would evolve, if at all persist, in such a toxic environment. The zone, an area that today covers around 2,600 kilometres and stretches between Kyiv and the Belarussian border, is culturally perceived – and technically is – one of the most radioactive places on the globe. Przewalskis are lauded as the last truly wild horse. They do indeed look like the horses in prehistoric cave drawings and have come to embody ideals of purity of breed (their story and connection to genetics are messier, but more on that in a bit). In several recent articles of dubious scientific merit, the population of

Przewalski horses in Chernobyl has been lauded as “thriving” and “flourishing”. With ups and downs in its numbers, the population has, despite expectations, persisted in the zone. Its preservation, and at times upsurge, is mostly measured according to the reproductive ability of the animals. The Przewalski in Chernobyl has come to represent a figure on the threshold, and that threshold infuses the very idea of purity with confusion and ambivalence.

Image of Przewalski horse

What can the insertion of a seemingly pure wild horse breed into a profoundly contaminated space tell us about human understandings of purity? And why should we care about purity and animals as symbols thereof? Of course, the notion of purity rears its head on the wrong side of history:

> Purity, especially bodily purity, is the seemingly innocent concept behind a number of the most sinister social actions of the past century. A passion for bodily purity drove the eugenics movement that led to the sterilization of women who were blind, black, or poor. Concerns for bodily purity were behind miscegenation laws that persisted more than a century after the abolition of slavery, and behind sodomy laws that were only recently declared unconstitutional. Quite a bit of human solidarity has been sacrificed in pursuit of preserving some kind of imagined purity. [1]

So writes Eula Biss in *On Immunity: An Inoculation*. What she so lucidly shows is that purity and its politics are inevitably based on a series of eliminations at the intersection of class, gender, and race. While she concludes with thoughts on human solidarity, in this essay, I want to probe forms of solidarity with nonhumans and/or the sacrifice thereof that have been forged in the name of preserving an imagined state of bodily purity. It seems that human encounters with nonhuman animals, some more direct than others, are sites where illusions of purity are rearticulated or where they crumble and fall, for better or for worse. My focus will be on sites and stories where the limits of purity are tested and in which animals appear in unlikely, fraught forms – as deadly mixtures of sheep’s wool and radiation, as risky food, as zoo curiosities, even as incarnations of humans. To approach animals through the prism of purity is to focus not only on how they mess with the sharply defined contours of bodies, but also, crucially, on the making of those contours as historically and presently oppressive.

PURE BREED, IMPURE NATURE

Hsu Che-Yu and Chen Wan-Yin, *Four Stories Behind the Zoo Hypothesis*, 2023
Lecture-performance at Künstler*innenhaus Mousonturm, Frankfurt, July 2023

Let's get back to the Przewalski horses. While I knew about their insertion in Chernobyl, I did not know that they share some common history with Nazism. In the lecture-performance *Four Stories Behind the Zoo Hypothesis* (2023), the artist-researcher duo Hsu Che-Yu and Chen Wan-Yin share some thoughts on that historical juncture. [2] Their narrative starts with the intimate, specifically Hsu's grandmother working in an animal laboratory in Taiwan; then moves to tales of animal puppeteers, eugenics, taxidermy, crossbreeding. Multiple threads are woven, tangled, untangled. One concerns the Heck brothers and their work with selective breeding programs during the Third Reich, in which Przewalskis were also involved. Directors of the Berlin and Munich zoological gardens in the interwar and war years, the Hecks saw as their mission to restore what they deemed original European species. One such, the tarpan, an extinct wild equine, fascinated them. To awaken its "dormant wild genes", as Hsu and Chen put it, they crossbred domestic horses and Przewalskis. While the Przewalski did tick the boxes of wildness and purity, the Hecks found its head too big and sought visual harmony in the balanced bodily proportions of the tarpan. Experimenting with species boundaries and outward appearances, they wanted to revive its wild blood. And they did. Eventually, they created the Heck horse. Experimenting with species boundaries in the name of a return to pure breeds, as we know all too well, also had tremendous real-life consequences not only for animals but also for humans.

Donna Haraway puts it best when she defines breeding as "this paper-plus-flesh system [that] is behind the histories of eugenics and genetics, as well as other sciences (and politics) of animal and human reproduction". [3] This kind of breeding was a pillar of the blood-and-soil ideology of National Socialism. The reasoning behind animal breeding's "paper-plus-flesh systems" was transposed into ideals about the human race. Przewalskis and multiple other species melded into a single plot line that included the human race, with the aim, as Eric Michaud has shown, to "breed according to a type", [4] the type here being the ideal type of human that would be the desired outcome of natural selection. Analogising the human with the animal condition is not the goal here; as Haraway and others have shown, analogies are tricky. [5] They risk disavowing

the incommensurability of some modalities of human existence – like blackness, indigeneity, LGBTQ communities, the people of Palestine, groups historically, and, increasingly today, bordering nonexistence. All ways of being that, despite fundamental differences, have been dehumanised also through animalisation.[6]

What the crude history and presence of the Przewalskis in Chernobyl *can* reveal, however, is that markers of purity, especially of race, inform and inspire biopolitical practices of elimination according to race, gender, abilities, and class. The horse and the toxic zone incarnate diametrically opposed figures: healthy and unhealthy, genetically clean and technologically mutated. In short, the pure and the impure. Adriana Petryna has shown that such negotiations of purity often come at the expense of the human: "We have better knowledge about recovering ecosystems of the Chernobyl dead zone, where a herd of rare and ancient Przewalski horses now run wild, where the decrease of certain birds' brain sizes has been observed, and where variability of species' response to radiation has been gleaned, than we do about recovering people and human conditions on the ground."[7] This irony becomes most evident in the discrepancy between cultural imaginaries of Przewalskis and other 'wild' animals in these nuclearised zones versus those of humans, which usually err on the side of technologically induced impurity: the uneasy, uncanny mutant genre. Humans on the wrong side of culture, animals on the right side of nature.

TALES OF TOXIC WOOL

But other Chernobyl creatures – creatures perhaps not as noble as the Hecks would have wanted, their mutations invisible to the human eye – defy the Przewalski's pure fiction. The purity symbolised by Przewalski in clickbait articles occasions a perceptual absence of how nonhuman life (and, as we will see in due course, human life) was actually affected by the accident. In the weeks following the meltdown, humans were evacuated from the zone, whereas animals faced another fate. The State Committee of Industrial Agriculture of Ukraine ordered the slaughter of fifty thousand sickly and highly radioactive animals from farms in the Zone of Alienation.[8] The animals' body parts were distributed to factories across the country as commodities; edible ones, like meat, but also wearable ones, like wool. Radioactive sheep's wool was given to a factory in the city of Chernihiv. The mostly women workers performed the task of washing and cleaning it before it went to another factory to be turned into usable fabric. This washing, however, was not intended to remove radioactivity. From these workers, this part of the story was spared. Sheep's wool, as a highly absorbent material, requires washing before it is spun since it contains a host of human-unfriendly entities, including grease, dust, dirt, and bacteria. This is what these women thought they were washing away. Their quotidian gestures later granted them "liquidator status"; they became recognised as individuals who partook in the cleanup operations following the accident. In other words, they became very sick. The unwitting washing of radioactive wool offers a highly instructive case by which to examine the ambiguous constellations that govern livelihoods and bodies – constellations involving secretly impure animals, covertly sick women, and state definitions of healthy bodies, or what after Chernobyl was deemed "biological citizenship".[9]

Encounters with dirty, toxic wool are a defining parameter in this story of bio-governance. While I was reading about these women, I couldn't let go of the image of female hands running their fingers through animal wool: drying it, plucking it, packing it for shipment to the next factory. There is a deep, uncanny resonance here with the practice of the late Margaret Raspé: mountains of sheep's wool, washing wool, sounding wool, and wool soaked in contaminated water were but a few configurations of the material in her hands. Raspé was precise in her intentions with animal wool, seeking softness and slenderness in its tactility, but also stories – of farmers, female labour, and pollution. She spent long summers with her daughter on the Greek island of Karpathos, in their holiday home, where, starting in the mid-1970s, she first encountered sheep's wool washing and drying by the seashore under the Aegean sun. Women farmers undertook this task. On the beach, she also heard the sounds of bells hanging around the necks of nearby herds of goats. In *Glocken-Wolle* (Bells – Wool, 1986), she dug her fingers into a big ball of wool while wearing bells in lieu of rings, thereby bringing the acoustics of female farming labour and domesticated animals into a tender dialogue with the silent materiality of wool. In that gesture, she carefully listened to her subject matter, allowing it to exist in relation to its history, refusing to occupy the position of an all-controlling master of nature and its resources, be they organic (animals) or otherwise. And in that act of listening, she also became curious about the properties of animal wool, the techniques to handle it safely, how to wash it, and where to source it.

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1. Margaret Raspé, *Aktion für unsere Flüsse* (Action for Our Rivers), 1989
Raw wool. Installation view, Enza River, Reggio Emilia, Italy. Photo: Ann Noël
2. Margaret Raspé, *Glocken – Wolle* (Bells – Wool), 1986
Black and white photograph.
Courtesy of the estate of Margaret Raspé and Galerie Molitor, Berlin.
Photo by Vincent Trasov.

Oftentimes, Raspé procured her raw wool from farmers outside of Berlin and conversed with them about how to cleanse it of unwanted bacteria. [10] Working with wool as a repository of nonhuman life and as a force of trans-science and transformation led her to submersion in the heavily polluted waters of a river in the Italian province of Reggio Emilia. For *Aktion für unsere Fluss* (Action for Our Rivers, 1989), a temporary installation, Raspé dipped wool into the River Enza, a tributary of the River Po known to be so contaminated that bathing in it was prohibited. She was interested in turning it into a sponge that would soak up the toxic flow and laid a chain of wool bundles in the stream. But rather than

producing a visual representation of the site, the artist ended up with a toxic material witness made of wool, imbued with its setting, including industrial residues. In a sort of protocol-poem that accompanies the work, Raspé stated: "I lie in the river / become the river / the river is contaminated / invisible poisoning / you can't bathe in the river / even less can you drink the water / I put wool in the river / the fever, the skin / become filter / become picture." [11] Wool, that first layer of animal skin that warms and protects humans and nonhumans alike, can become deadly to both, as the story of the Chernihiv women shows us and as the gesture of *Aktion für unsere Fluss* materially arrests. The animal wool is both filter, in Raspé's words, and fever, pure and impure at once.

Margaret Raspé, *Unterschlupf* (Shelter), 1991, five pairs of large clay pots, one suspended, one in the ground, containing white raw wool, 30 x 30 each. Temporary outdoor installation. Location: Rhumeweg 26, Berlin. Date: November 1991. Organisation M. Raspé. Catalogue *Freiluft II.*

Such tales threaten what the decolonial feminist philosopher María Lugones sharply described as "the lover of purity": he who shuns impurity, multiplicity, and ambiguity, and he is a fiction of their own imagination. [12] Aptly, Raspé, a few years after *Aktion für unsere Fluss,* would return to wool as a material whose impurity is not solely threatening, but sometimes, in some places, can also offer protection and reprieve. In the outdoor installation Unterschlupf (Shelter, 1991), she laid five clay pots on the ground, stuffed them with raw wool, and left them there for the winter. The impromptu cushiony wool nooks were meant to provide shelter for animals in the cold months.

DANCING WITH THE OTHER

Animal-as-wearable, like wool, takes a completely different turn in *Ysabel's Table Dance* (1987), a film by Ansuya Blom. In it, we see a woman, solo, holding a lush buffet in honour of the birthday of a friend who may be imaginary, as they are nowhere to be seen throughout the film's duration. The absent friend is conjured in a form customarily perceived as bleak: entrails. Indeed, Blom sourced the vital organs from a local market. Later, the artist would also take up a long-standing series of drawings with photographs of such organs over the human body entitled

…daß dieser Mensch… (…that this human being…, 1991–ongoing). It is the preambles of these hybrid beings that we see in *Ysabel's Table Dance*, whereby the actual organs (not photographs of them) are overlaid on drawings of human figures. As dreary as this might seem, however, the offal, real and photographed, does not conform to the fleshiness of the body-horror genre. It rather offers an opportunity to detract from the logical purity of oneself and complicates the line between our bodies and those of other beings – animal and human.

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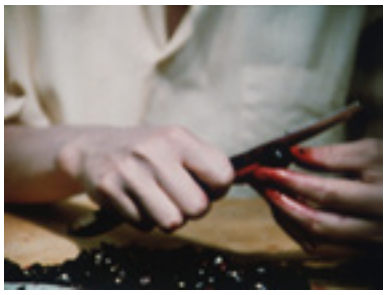

Ansuya Blom, *Ysabel's Table Dance,* 1987
16mm film, colour, sound, 6 min.
Film stills
A film by Ansuya Blom © 1987
Collection Stedelijk Museum Amsterdam, Netherlands

In the final scene, Ysabel, wearing an off-white shirt, stuffs its many little pouch pockets with the organs while dancing on the melody of Charles Mingus' eponymous song. Rhythmically, she layers them over the respective locations of her own organs: a lamb's heart over her own heart, a sheep kidney over her own kidney, an animal brain over her own brain. Blom, via Ysabel's tiptoe dance, does not overstate an imagined potential of liberation from bodily fixity and ontological categories; after all, she does not cook or eat the offal (the ultimate act of bodily relationality) but wears it. Dressing oneself with vital organs "above, not below, the skin", as art critic Stuart Morgan perceptively observed, permits us to think about human insides and outsides, "the line between Self and Other and its constant renegotiation". [13] Ysabel is and is not her friend, is and is not herself, and is and is not Other. This oscillation is perhaps most intelligible in the faint 'bloodiness' of the animal-turned-human vital organs, which appear toy-like on screen. There is not much blood in the film, but the colour red appears in the juices of smashed cherries on the table's white cloth. The market-bought organs, as Ysabel carefully places them inside the pouch pockets, stain the white fabric only ever so slightly. It's not that the stain does or doesn't appear, but that it seems unreal when it barely does.

The dimness of the stain, just like Ysabel's friend, could also be understood as a refusal to mark one's territory, to mark a boundary. Michel Serres has described the very act of leaving stains and marks as a process of appropriation, tracing how bodily matters, including blood, have been used to demarcate space and mark human territory. [14] Since antiquity, bodily fluids and excrement have inscribed possession and property, a thought Serres later developed by proposing the very act of pollution in the modern era as another of case of stain-making across space: "appropriation through pollution". [15] Conversely to appropriation by staining, Ysabel uses animal organs intentionally to induce a ritual of self-hybridisation that could potentially bring her closer to her friend (again, the no-eating part is crucial). If her organ-placing choreography barely leaves any stains, it does evoke their uneasy possibility. Dancing her way around the boundaries and edges of soiling gestures, Blom uses the power of suggestion to refute illusions of bodily purity. Incidentally, cherries leave indelible stains, notoriously difficult to remove.

While Ysabel's identity is secured, it does hold space for the bodies of others. Her indeterminate posture does not simply revel in entanglement. She experiences a body that is larger and more diffuse than the one traditionally ascribed to the human. She experiences a body that is touched by another, nonhuman body, making her dance apt for discussions on species, biological purities, and bodily boundaries. And bodily boundaries, as much as recent theories of entanglement (especially multispecies entanglement) have questioned and defined them as a construct, are also necessary for survival. Her image is striking precisely as it visualises both the anxieties and the pleasures entailed in a confusion of bodies, of insides and outsides, of boundaries, and, ultimately, of selves.

NOT EATING, DISSECTING

The mental image of joining the insides of an animal, encountering its anatomy via its vital organs, as evoked by *Ysabel's Table Dance*, helps us unsettle illusions of purity while navigating purity's crumbling contours. "Pure Fiction" started with animals in vast expanses of radioactive nature and ends, more or less, where it began: in a vast expense of contaminated land where wild animals are making their new home, where their bodies serve "as texts from which to read the precise nature of the (atomic) bomb's power". [16] The animal-body-as-text is how anthropologist of science Hugh Gusterson reckoned with the pigs, dogs, monkeys, and cows on which nuclear scientists of the Manhattan Project studied the effects of radiation on the body. The animal-body-as-text is also how, in the twenty-first century, those affected by the catastrophe of the Fukushima Daiichi Nuclear Power Plant learned to live with radiation. And yet, animals in a Cold War nuclear laboratory are entirely different from animals in an irradiated zone. While the former supported the tangled growth of atomic physics and nuclear war, the latter became allies in strategies of survival. Like the pristine image of the Chernobyl Przewalskis, nonhuman animals in the areas around the Fukushima Daiichi Nuclear Power Plant also turn into framing devices to make sense of life in irreversibly contaminated spaces.

After the accident, the politics of food emerged as a locus where Japanese citizens could regain a sense of agency over official state narratives about levels of contamination. Although Japan did not experience a deep radicalisation of its society through food politics, food has become an interface of emotional (but always political) analysis of the disaster in a post-Fukushima world. [17] Post-Fukushima, the line demarcating edible from inedible is thin and shifts from eater to eater. As one of the few tangible cases where the threat of radiation acquired a sense of immediate reality, food has functioned as a binding force that connects livelihoods with landscapes that once sustained life but have become too toxic to spend more than a few hours in at distanced intervals. Eating, in theory, and in practice, substantiates the material co-constitution of relationality with nonhuman others. Eating emerges as a connecting chain, linking humans to numerous others as it instigates a host of elemental bodily processes – digesting, excreting, essentially surviving – all primary processes imbued with unknown risks after the accident. What happens when eating becomes risky, in fact, when it is no longer an option? What forms of human-animal relationality emerge? What forms of impurities are negotiated?

Mélanie Pavy, "Monologue d'un Sanglier" (A Wild Boar Monologue), *Mon Furusato*, 2018, 70´. Film still.

"Hunters are commissioned to deal with the upsurge of wild boars. We cannot eat them. After they are killed, they are buried on-site. What a waste!" A narrator in *Mon Furusato* (2018) voices his thoughts on the wild boars that have populated the small farming village of Tōwa in the prefecture of Fukushima after the catastrophe. Written and directed by Mélanie Pavy in collaboration with anthropologist of science Sophie Houdard, the film meanders between different monologues by residents of Tōwa. For three years, Pavy installed a small film

studio in the village, where various community members shared stories about what it means to live in an invisibly toxic landscape. The narrator in question is the owner of a small restaurant, Mûto Kotomi, and his monologue is titled "Monologue d'un sanglier" (Monologue of a Wild Boar). He goes on: "Even if we cannot eat them, for us, cooks, it is rare to be able to joint a boar in whole." "To get the hang of it, I asked a hunter to provide us with one. I gathered with some colleagues, and we took the opportunity to study the jointing process." What we hear next is a surgical explanation of the fine art of cutting up a wild boar in order to obtain its offal, a rare delicacy – a lesson in culinary anatomy where the animal becomes a dissection table, its internal forms and organs described with surgical precision. Mûto intones, placidly: "We take the guts out, bit by bit. A little transparent pocket, we take it out of the animal." "We cut the tongue." At a certain point, he reminds us: "Of course, I am talking about a boar that we cannot eat." The wild boars are killed because they are too radioactive, but their dead bodies have found new purposes across this small rural community. Here lies the aporia of the absurdity of living among invisible radioactive particles. Here is also a very tangible collapse of the category of purity: in the encounter of a wild boar's internal anatomy by a restaurant owner.

What are we to do with this disconcerting story of dissection for the purpose of dissection (and not consumption)? Shall we take these words at face value as an innocent celebration of the unforeseen learning opportunities offered by the accident? I have no ethically satisfying answer. Mostly, I am left with a sense of unease. What I do know is that "Monologue d'un sanglier" captures the wild boar's body as impure and thus infectious but also makes clear that this impurity can be beneficial and antagonistic, at once, to the bodies and entities, human and nonhuman, it moves through. It opens up new forms of togetherness. While it suggests that constructs like purity are no longer relevant, it also implies that upholding bodily boundaries is sometimes necessary and that this need not equate to upholding ideals of purity.

The lives of these wild boars, horses, and myriad other animals, these lives that are no longer lives, as Haraway would put it, are made killable because they are considered impure: "Perhaps the commandment should read, 'Thou shalt not make killable,'" she continues. [18] Killability and purity discourses seem to go hand in hand, and animals insistently appear to both embody but also negotiate and shutter this uneasy conceptual pair. From sheep's wool in the hands of Raspé and in the waters of a polluted river to offal sourced in a market in Amsterdam in Blom's dance, all the way to uncanny encounters with boar anatomies in post-Fukushima restaurants, the nonhuman casts doubt on understandings of purity. In other words, it shows purity as fiction and impurity as a defining condition of life, happening all the time, on different scales, with staggeringly different consequences for different bodies. These animals' pure fictions demand that we sit uneasy. And we should – we live in an uneasy world.

- The header is a still from an ongoing video archive of thylacine sightings compiled by Michela de Mattei. The archive features all currently available footage sourced from online communities and regarded as evidence of its existence. The archive will expand as new evidence emerges.

ABOUT THE AUTHOR

Kyveli Mavrokordopoulou is an art historian and curator, currently a postdoctoral fellow (VENI) and lecturer at the Vrije Universiteit Amsterdam. Her research, at the intersection of art and science history and the environmental humanities, centers on nuclear aesthetics and explores material histories of art and the environment, toxicity, antinuclear activism and feminist discourses. She is currently co-editing the volume *Toxic Materialities: Exposure and Pollution in Art Making Across Histories and Geographies* (forthcoming with Brill). She was the scientific advisor of the exhibition *Atomic Age. Artists Grappling with History* (2024–25), at the Musée d'art Moderne, Paris, and a postdoctoral research fellow at Käte Hamburger Kolleg, RWTH Aachen University (2022–23). She obtained her PhD from the École des hautes en sciences sociales, Paris (2021), supported by an Onassis foundation scholarship, entitled *Dwelling, Extracting, Burying: Nuclear Imaginaries in Contemporary Art* (1970-2020).

FOOTNOTES

1. Eula Biss, *On Immunity: An Inoculation* (London: Fitzcarraldo Editions, 2014), 81–82.
2. The lecture-performance was presented at the Künstler*innenhaus Mousonturm, Frankfurt, on 14 July 2023, adjacent to their film installation *A Zoo Hypothesis,* which explores two cases of animal cruelty in Taiwanese zoos; the lecture-performance presented research that went into its making. I thank them both for sharing the script.
3. Donna J. Haraway, *When Species Meet* (Minneapolis: University of Minnesota Press, 2008), 54.
4. Eric Michaud, *Un art de l'éternité : L'image et le temps du national-socialisme* (Paris : Gallimard, 1996), 229. All translations are my own unless otherwise specified.
5. In a footnote, Haraway warns us that analogy might erase the "irreducible difference and multiplicity", and each atrocity demands its own vocabulary. Haraway, *When Species Meet*, 336. In her history of the Afro-dog, Bénédicte Boisseron also cautions against analogising the Black condition with animal life, as hierarchies of race versus species might elide one at the expense of the other. Bénédicte Boisseron, *Afro-Dog: Blackness and the Animal Question* (New York: Columbia University Press, 2018), 31.
6. Examples abound. On the 16th of October 2023, Israeli Prime Minister Benyamin Netanyahu twitted about Israel's war on Palestine as a "struggle between the children of light and the children of darkness, between humanity and the law of the jungle". The analogy between animals and enslaved people is rooted deep in the Western tradition.
7. Adriana Petryna, *Life Exposed: Biological Citizens After Chernobyl* (Princeton, NJ: Princeton University Press, 2002), xxvii.
8. This information, and what follows, is derived from Kate Brown, *Manual for Survival: A Chernobyl Guide to the Future* (Allen Lane, 2019), 81–94.
9. Adriana Petryna, *Life Exposed.*
10. I thank Marie-Christine Molitor of Galerie Molitor, holder of Raspé's estate, for generously sharing information with me in March 2025.
11. *Margaret Raspé, Arbeiten 1970–2004: Film, Video, Installationen, Zeichnungen, Projekte* (Tübingen/Berlin: Wasmuth, 2004), 104.
12. María Lugones, "Purity, Impurity, and Separation," *Signs* 19, no. 2 (Winter 1994): 458. I am using the pronoun *he* following Lugones.
13. Stuart Morgan, "The Secret Life of Belly and Bone," in *Ansuya Blom* (Amsterdam: Stedelijk Museum Amsterdam, 1990), 6.
14. Serres takes the case of the fratricide of Remus. Murdered by his own brother, Romulus subsequently founded the city of Rome on the blood-soaked soil. Michel Serres, *Rome: The First Book of Foundations* (1983) (London: Bloomsbury Academic, 2015).
15. Michel Serres, *Le mal propre : Polluer pour s'approprier?* (Paris : Éditions Le Pommier, 2008), 58.
16. Hugh Gusterson, *Nuclear Rites: A Weapons Laboratory at the End of the Cold War* (Berkeley: University of California Press, 1994), 108.
17. On that, see Aya Hirata Kimura, *Radiation Brain Moms and Citizen Scientists: The Gender Politics of Food Contamination After Fukushima* (Durham, NC: Duke University Press, 2016), especially Chapter 4, "Citizen Radiation-Measuring Organizations".
18. Donna J. Haraway, *When Species Meet*, 80, 89.